

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 2. This sheet, which includes Fig. 2, replaces the original sheet including Fig. 2.

Attachment: Replacement Sheet

REMARKS

Favorable reconsideration of this application is respectfully requested.

A replacement Figure 2 is submitted herein to clarify the placement of element 70 therein, and to indicate a connection from element 70 to element 87. Applicants submit no new matter is added as that subject matter now clarified in replacement Figure 2 is noted in the specification, see for example page 11, line 35 to page 13, line 16.

Claims 1-19 are pending in this application. Claims 1, 3, 4, 11, 12, and 13 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. patent 6,991,927 to Mross et al. (herein “Mross”). Claim 2 was rejected under 35 U.S.C. § 103(a) as unpatentable over Mross. Claims 5, 7, and 14-16 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 6,479,822 to Nelson et al. (herein “Nelson”). Claims 6, 8-10, and 17-19 are allowed.

Initially, applicants gratefully acknowledge the indication of the allowance of claims 6, 8-10, and 17-19.

Addressing first the rejection of claims 1, 3, 4, 11, 12, and 13 under 35 U.S.C. § 102(e) as anticipated by Mross, and the further rejection of claim 2 under 35 U.S.C. § 103(a) as unpatentable over Mross, those rejections are traversed by the present response as now discussed.

Each of independent claims 1 and 3 is herein amended to clarify features recited therein. Each of those claims now clarify the narrow tube is a “cylindrical” narrow tube “configured to be inserted in a biological body”. That subject matter is believed to be clear from the original specification, see for example page 10, lines 20-36.

Claims 1 and 3 also now further recite “a high frequency transmission line embedded in the narrow tube, configured to transmit the electromagnetic wave to the electromagnetic wave irradiation terminal from the bottom end of the narrow tube”, and independent claim 3

even further recites a “frequency adjustment device”. Those features clarified in claims 1 and 3 are believed to be clear from the original specification, see for example page 11, line 35 to page 13, line 16.

The features recited in each of amended independent claims 1 and 3 as currently written, and thereby in claims 2, 4, 11, 12, and 13 dependent therefrom, are believed to clearly distinguish over Mross.

Applicants first submit Mross does not disclose or suggest the device therein includes a cylindrical narrow tube configured to be inserted in a biological body. Mross discloses a method for irradiating a biological sample, but Mross does not disclose or suggest a narrow tube to be inserted into a biological body. Mross indicates a “waveguide can be drawn (in, e.g., a flame) so that it gradually tapers from, e.g., 1 centimeter diameter down to e.g., about a tenth of a wavelength in diameter at the distal end” (Mross at col. 15, lines 16-20). However, Mross does not disclose or suggest that a cylindrical narrow tube is configured to be inserted in a biological body.

Moreover, applicants respectfully submit Mross does not disclose or suggest the feature now clarified in the claims as to a “a high frequency transmission line embedded in the narrow tube, configured to transmit the electromagnetic wave to the electromagnetic wave irradiation terminal from the bottom end of the narrow tube”.

As clear for example from equations (2)-(5) in the present specification at pages 23-24, the claimed invention utilizes the claimed structure to irradiate, for example, a terahertz wave into an inner portion of a biological body. Thereby, the claimed cylindrical narrow tube that can enter into a biological body, for example by puncture or incision such as implemented by an endoscope probe, a laparoscope employed in operations such as extirpation surgery of a gallbladder (Laparoscopic Cholecystectomy), a needle-shaped appliance employed in surgical operations of prostatic cancer, a catheter configured to be

inserted into a blood vessel or a body cavity, etc. As one example given in the present specification at pages 23-24, a penetration depth  $\delta$  may be approximately 70 micrometers for a frequency of 3 THZ, and the penetration depth  $\delta$  may be approximately 115 micrometers for a frequency of 1.2 THZ.

With the claimed structure it becomes possible to irradiate an electromagnetic wave to a cell of an inner portion of a biological body using the claimed cylindrical narrow tube, and thereby frequency can be adjusted to a resonance frequency of an abnormal cell disposed in a deep inner location in the biological body so as to selectively cause a resonance state of the abnormal cell, while normal cells around the abnormal cell will not be excited by the electromagnetic wave.

Mross is not directed to any type of similar device, and Mross does not disclose or suggest the now addressed above-noted operations of inserting the claimed narrow tube into a biological body.

In view of the foregoing comments, applicants respectfully submit each of amended independent claims 1 and 3, and accordingly the claims dependent therefrom, patentably distinguish over Mross.

Addressing now the rejection of claims 5, 7, and 14-16 under 35 U.S.C. § 103(a) as unpatentable over Nelson, that rejection is traversed by the present response.

Independent claim 5 is herein amended to clarify features recited therein by now reciting “a plurality of antennas” and “a blanched high frequency transmission line”. The features clarified in independent claim 5 are believed to be clear from the original specification, see for example Figures 9-11 and page 21, lines 6-28. Applicants respectfully submit amended independent claim 5, and accordingly claims 7 and 14-16 dependent therefrom, patentably distinguish over Nelson.

First, applicants submit Nelson does not provide any disclosure or suggestion of utilizing a plurality of antennas provided on an antenna support member. The outstanding rejection relies on Nelson to disclose an antenna, citing Nelson at column 1, line 10 to column 3, line 55.<sup>1</sup> Applicants, however, submit Nelson does not disclose or suggest a plurality of antennas provided on an antenna-supporting member, and applicants submit it is not at all clear on what basis the outstanding rejection is even citing Nelson to disclose any antenna. In that respect Applicants draw attention to Nelson at column 4, lines 55-57 at which Nelson states “[f]or example, systems and methods described herein can be used to generate and/or detect terahertz frequency radiation *without the use of a photoconductive dipolar antenna*” (emphasis added). From that disclosure Nelson appears to disclose the opposite of the claimed features as Nelson appears to disclose avoiding the use of an antenna.

Furthermore, Applicants respectfully submit Nelson does not disclose or suggest the “blanched high frequency transmission line configured to deliver an electromagnetic wave” to each of the plurality of antennas.

The claimed invention as recited in independent claim 5 makes it possible to irradiate an electromagnetic wave to a wide area of a biological body using the claimed plurality of antennas to selectively cause a resonance state of an abnormal cell to serve as a biological body, while normal cells around the abnormal cells are not excited by the electromagnetic wave. Nelson is not even directed to any similar device.

In view of the foregoing comments applicants respectfully submit amended independent claim 5, and accordingly the claims dependent therefrom, distinguish over Nelson.

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<sup>1</sup> Office Action of January 7, 2009, bottom of page 4.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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